

# IRP 16: Individual Research Project

## Topic

Investigating the utility of classical XAI methods in financial time series

## Objectives

The introduction of complex ML and DL methods for financial time series forecasts potentially enables higher predictive accuracy but this comes at the cost of higher complexity and thus lower interpretability. For cross sectional data classical XAI approaches can lead to valuable insights about the models' inner workings, but these techniques generally cannot cope well with longitudinal data (time series) in the presence of dependence structure and non-stationarity. The literature currently does not offer any XAI approach that is specifically developed for financial time series. Further research is needed on developing explainability methods that can be applied to complex models like deep learning methods (DL) which preserve and exploit the natural time ordering of the data.

## Involvement

- IRP belongs to WP3 (Explainable and fair AI)
- WP Leader: BFH (Bern)
- Three supervisors from secondments: ECB, FRA, and BIS

## Deliverables

Within this IRP, we will **propose a set of novel explainability functions** that are specifically **tailored for financial time series**. Generating artificial data points through random replacement disregards the time sequence hence producing unrealistic values for the feature of interest. In addition to the novel, finance-tailored methodology for obtaining explanations, the project will also aim to **produce industry-ready deployments of the novel XAI techniques developed**.

